



Redlands Schools Seismic Mitigation

Full Mitigation Best Practice Story

San Bernardino County, California

Redlands, CA - The Redlands Unified School District has a year-round campus program that results in virtually continuous high occupancy and use of all school facilities. The district has 21 buildings. Of these, 19 are schools and offices, and two are for support services.



In July of 1992, two earthquakes struck the area an hour apart, both over 7.0 magnitude on the Richter Scale. Landers was the epicenter for one earthquake while the other was in the Big Bear area. Both were felt at Redlands' schools as well as others in San Bernardino County. Redlands Unified School District facilities sustained damage and items were shaken from shelves, causing life safety hazards.

The San Bernardino County Office of Education, working on behalf of both the Redlands and Colton Unified School Districts, applied for a grant through FEMA's Hazard Mitigation Grant Program (HMGP). The grant was awarded, and the school district embarked on a non-structural mitigation program.

The Redlands district concentrated on securing portable rolling cabinets and computer hardware. The portable cabinets are used for supplies that are moved between classrooms. Although, these cabinets have foot locks, a potential tipping hazard remains. Hence, a custom-designed strapping and floor attachment system was developed to stabilize cabinets during use but still allow for portability. Life safety is the primary benefit of securing rolling cabinets because injuries, even death, may be prevented through this type of mitigation.

Hold-downs for all desktop computer hardware (monitors, CPUs and printers) have been installed. The value of the Redlands district's computer equipment is \$1 million. Protection of this critical business asset is considered to be well worth the cost of doing the mitigation project. The benefit/cost ratio could be far more than one-to-one if computers and other valued equipment that have been mitigated withstand the forces of the next earthquake disaster.

The cost of this project was \$74,150. Half of the funding came from the HMGP grant obtained by the San Bernardino County Schools Office for non-structural mitigation at public schools in the county. The Redlands School District contributed matching funds for this project.

Activity/Project Location

Geographical Area: **Single County in a State**

FEMA Region: **Region IX**

State: **California**

County: **San Bernardino County**

City/Community: **Redlands**

Key Activity/Project Information

Sector: **Public**
Hazard Type: **Earthquake**
Activity/Project Type: **Retrofitting, Non-structural; Retrofitting, Structural**
Activity/Project Start Date: **06/1998**
Activity/Project End Date: **01/2000**
Funding Source: **Hazard Mitigation Grant Program (HMGP); Local Sources**
Funding Recipient: **Critical Facility - School**
Funding Recipient Name: **Redlands Unified School District**

Activity/Project Economic Analysis

Cost: **\$74,150.00 (Estimated)**

Activity/Project Disaster Information

Mitigation Resulted From Federal
Disaster? **Yes**
Federal Disaster #: **947 , 07/02/1992**
Value Tested By Disaster? **No**
Repetitive Loss Property? **Unknown**

Reference URLs

Reference URL 1: <http://neic.usgs.gov/>
Reference URL 2: <http://www.oes.ca.gov/Operational/OESHome.nsf/1?OpenForm>

Main Points

- In July of 1992, two earthquakes struck the area an hour apart, both over 7.0 magnitude on the Richter Scale.
- The Redlands district concentrated on securing portable rolling cabinets and computer hardware. A custom-designed strapping and floor attachment system was developed to stabilize cabinets during use but still allow for portability.
- Hold-downs for all desktop computer hardware (monitors, CPUs and printers) have been installed. The value of the Redlands district's computer equipment is \$1 million. Protection of this critical business asset is considered to be well worth the cost of doing the mitigation project.